QChat™

The Complete Push-to-Talk Solution for CDMA Operators

White Paper

QUALCOMM® | Internet Services

"Nextel and those that are permitted to use QChat will be offering PTT, and the rest of the wireless networks will be offering voice instant messaging (VIM)… VIM will not offer network operators any advantage over their competitors."

> *Andrew Seybold*
> *President, Editor/Publisher*
> *Outlook 4Mobility*

"PTT that is well-engineered, like QChat, will provide a complimentary form of communication that is very fun to use in a social setting and productive in a business setting."

> *Kenneth J. Rehbehn*
> *Principal Analyst, Wireless Infrastructure*
> *Current Analysis, Inc.*

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Introduction

Push-to-talk (PTT) is an always on communications service that provides wireless users with a valuable and *virtually* instantaneous method of connecting to other users – with just the push of a button. PTT is a new class of telephony service that meets different needs than standard voice telephony. As a supplement to traditional voice telephony, PTT services have proven to increase an operator's average revenue per user (ARPU) and reduce subscriber churn (switching from one service provider to another.)

QUALCOMM's QChat™ is a PTT communications technology for 3G CDMA networks. It uses no proprietary hardware and can run on any CDMA 1x packet data with dormancy network. QChat is a Voice-over-IP ("VoIP") PTT application that enables instant, one-to-one and one-to-many half-duplex communication.

The PTT Market and Nextel

In the United States, Nextel has been very successful offering PTT services. Nextel's PTT solution, called Direct Connect®, is based on iDEN®, a proprietary adaptation of the GSM MAP core and Motorola's Dispatch Application. Nextel's Direct Connect PTT service offering accounts for more than 75 percent of Nextel's total calls. Nonetheless, Nextel's telephone usage today exceeds 600 minutes of use ("MOU") per month per user. The fact that Nextel's MOU equals the industry average indicates that the addition of PTT services will not reduce an operator's telephony revenues. Due largely to Direct Connect, Nextel has performance numbers that are the envy of its competitors:

- Low churn rate of two percent
- Industry-leading ARPU of $70/month

What is QChat?	**QChat is the best performing and most cost-effective next-generation PTT service in the world.**

The Benefits of Deploying QChat

CDMA operators have major incentives to quickly understand the options and associated short term and long term business cases for adopting QChat:

- There is potential for explosive growth in this untapped sector
- Given the low churn rate, it is of paramount importance to be first to market
- Scaling this explosive new service on wireless networks is a critical technology decision point

How QChat Works

QChat enables communication to begin with a single press of the PTT button on the handset. A QChat call is formed by combining separate point-to-point connections between each IP endpoint at a managing entity known as the QChat Applications Server (QAS), deployed on the operator's IP Wide Area Network (WAN).

Pressing the PTT button originates a call to the target QChat user and provides the originator with information indicating the availability (presence) of the target user. If the target user is available, the originator receives an immediate indication that the target user is available and the originator can begin speaking. The call originator's voice is then sent through the operator's network to the target's handset. Initiating a call to a QChat user who is not available will simply result in a non-response tone rather than a busy signal or a voicemail.

The QChat client is the software that resides on the handset and serves as the platform for all QChat applications. QChat is written as a Binary Runtime Environment for Wireless™ (BREW™) application, and is thus available to be used by other applications. Users will have access to both QChat and BREW-enabled data applications as the BREW platform manages the intersection of data and telephony features on a mobile handset.

The Advantages of QChat

QChat's features provide a complete PTT solution that equips users with virtually instantaneous communications functionality. QChat is the best performing PTT solution available today and provides substantial competitive advantages for CDMA operators:

1. QChat is up to three times as fast as competitive offerings in call set up time, a critical factor to evaluate for the effectiveness of a PTT solution.

2. QChat is the only PTT solution that is engineered for CDMA networks.

3. QChat is the only PTT solution that provides out-of-the-box support for multimedia services.

4. QChat offers 1/10 the signaling traffic load of competitive solutions, an important benchmark for measuring the messaging traffic on a network.

5. QChat is twice more bandwidth efficient than most competitive solutions.

6. QChat enables over-the-air client download and recall capabilities on the handset through the BREW platform.

7. QChat allows for easy implementation of the user interface across multiple device types and in multiple languages.

8. QChat supports dynamic management of group membership by subscribers – so they'll be able to add or remove participants at any time, anywhere on their handset.

9. QChat is the only PTT solution that is interoperable with Nextel's industry leading Direct Connect service in North America.

Deployment Risks for Competitive Solutions

A significant risk in deploying a PTT system is the added messaging load on the network. CDMA networks are already loaded with telephone calls, data calls and SMS messages. Adding a PTT service will likely increase the network signaling traffic by 4X, since three PTT calls are generally made for every phone call. PTT calls last less time, around 30 seconds, but many more are made than telephone calls.

It is important to look at traffic channel utilization carefully when evaluating PTT. Traffic channel loads are more difficult to calculate given the proprietary nature of most PTT solutions. By design, QChat calls take 40 percent less traffic channel load than full-duplex calls of the same length. QChat's competitors employ more traffic channel resources in a PTT call than in a full duplex voice call. Operators should measure traffic channel load to determine latency performance when comparing QChat with competing solutions. While many vendors conduct PTT application demos with apparent ease, it is common knowledge that their traffic channels are nailed up during these demos to reduce call set up latency.

Key Factors to Consider

- QChat gives a manageable increase in signaling load, but competing solutions will overwhelm the network.

- QChat set up latencies are under two seconds. Competing solutions have set up latencies of at least five seconds.

QChat transmission latencies are well under one second and are effectively perceived as instantaneous by the end user. Competing solutions have transmission latencies of two to 10 seconds.

The QChat Market Opportunity is Now

QUALCOMM is committed to the proliferation of QChat and has a strategy for global success:

- Establish a worldwide network of PTT solution providers with seamless roaming.
- Provide the necessary marketing insights and operational knowledge to enhance the user experience, promote PTT usage and grow the QChat solution.

- Enable a low-cost alternative to international long distance calls.

Nextel's success with Direct Connect PTT service in the U.S. suggests that implementation of QChat could easily increase a QChat operator's marketshare by eight percent or more. PTT gives a QChat operator a natural way to differentiate its CDMA services from GSM based data offerings. Adding PTT could increase a QChat operator's billable data traffic as much as four-fold. QIS estimates a QChat operator's ARPU from PTT alone will be from $4 - $20 (U.S.D.) Additionally, QUALCOMM predicts a QChat operator will indirectly attract heavy users of phone services. As Nextel has seen, such users provide both high total ARPU and reduced churn.

QChat is the superior PTT solution, and market opportunities will be optimal for operators that deploys QChat quickly. Low latency and advanced features are mission-critical for this market segment, and QChat's demonstrated superiority will always be compelling. QUALCOMM looks forward to working with operators to implement QChat – the premier PTT solution.

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